

## ABSTRACT

A wireless communication system which comprises a plurality of base stations and a user equipment. Each base station transmits a common primary synchronization code (PSC) in a primary synchronization channel at a different timing within a system frame, and a midamble code in a broadcast channel. A transmitted power level of the PSC and midamble code are at a common fixed ratio for each base station. The user equipment (UE) is capable of conducting cell search and includes a receiver for receiving said PSCs, a signal power measuring device for measuring the power level of received PSCs and identifying a frame timing of received PSCs which exceed a power threshold, and a processor for analyzing data signals received in the primary synchronization channel associated with the PSC with the highest power level of the received PSCs with a threshold exceeding power level. The processor also synchronizes or maintains synchronization with the base station associated with the highest PSC, the data signals including secondary synchronization codes.